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Forest Service

United States Department of Agriculture

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Balsam Poplar

An American Wood

Balsam poplar, a medium-sized tree, is predominantly a native of Canada, with its southern range extending into the Lake States. The wood is light in weight and has many desirable properties. However, it is an under-utilized species, being less preferred than aspen or cottonwood for most products.

Balsam Poplar

(*Populus balsamifera* **L.**)

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Distribution

Balsam poplar is widely distributed across Canada. It grows from Newfoundland and Labrador westward along the northern limit of tree growth to the Yukon Territory and northwestern Alaska, then southward to northern and northeast British Columbia, southward and eastward through Alberta and Saskatchewan to northern North Dakota, northeastern South Dakota, and northern Minnesota and Wisconsin, to southern Michigan, New York, and Maine. It also occurs locally in the Rocky Mountains south to Colorado and in parts of northern Iowa, Illinois, northern and southeastern Ohio, southern and eastern Pennsylvania, northeast West Virginia, northern Delaware, and northern New Jersey (fig. 1).

Balsam poplar is a distinctly northern tree and reaches its greatest size in the Mackenzie River Valley of northwestern Canada, where it forms large, pure stands. It is found on a wide range of soil types, but best development occurs on moist, low-lying, deep sandy or gravelly soils. Although abundant moisture is a necessity, balsam poplar will not grow in areas of excess moisture. It seldom occurs on dry sites.

The commercial range of balsam poplar is a rather narrow band that begins in New Brunswick and extends westward across northern New York and southern Quebec. The band then widens out to include southern Ontario and the extreme northern parts of Michigan and Wisconsin and northeast Minnesota, and then extends northwestward through central Manitoba and Saskatchewan. The band then widens further to include southern Alberta and north to southcentral Northwest Territories.

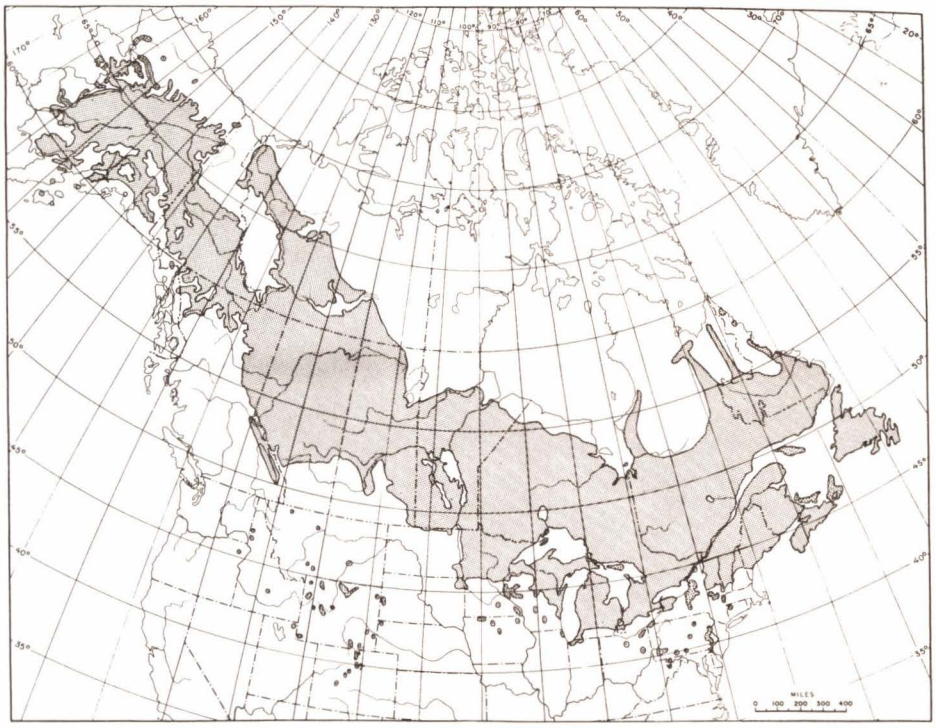

Figure 1.—Range and distribution of balsam poplar. F-506635

In western and northwestern Canada and along most of the larger rivers in interior Alaska, balsam poplar typically grows in fairly pure stands, often extending over a sizable area. Over much of the rest of its range it is found with associated species either singly or in small stands. It is commonly found in mixture with quaking aspen, paper birch, balsam fir, white spruce, black cottonwood, black spruce, black ash, elm, maple, willows, and other shrub and tree species of the northern forests.

Description and Growth

Balsam poplar is a medium-sized tree generally 60 to 80 feet tall and 12 to 24 inches in diameter. It occasionally reaches heights of 100 feet and diameters of 4 feet or more.

The tree has a long, straight, cylindrical bole with an open crown of

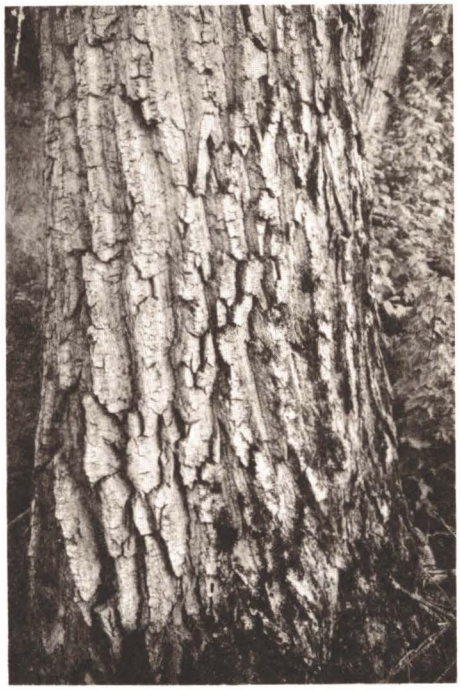

Figure 2.—Bark of a mature balsam poplar. Notice the flat-topped rough ridges separated by irregular V-shaped crevices. F-482795

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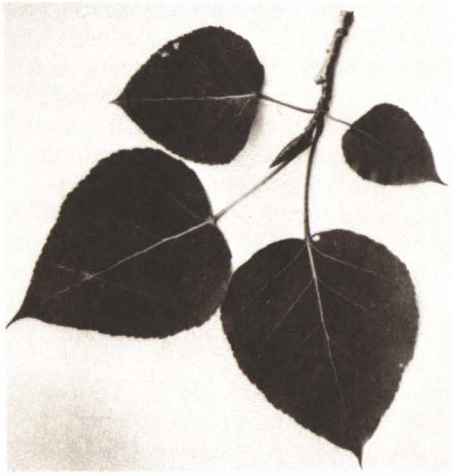

Figure 3.—Leaves of the balsam poplar are egg-shaped and gradually tapered to a sharp tip. F-49079

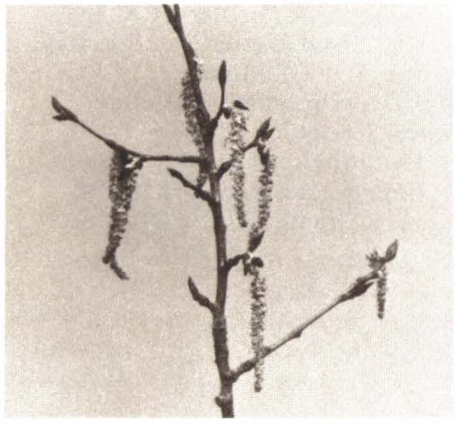

Figure 4.—Mature flower catkins and seed-bearing capsules of balsam poplar. F-527513

a few stout, ascending branches and a shallow root system. The crown varies in shape from narrow and pyramidal when young to fairly broad and round-topped when old.

The bark of young balsam poplar is smooth and greenish brown to reddish brown. As the tree matures, the bark turns dark gray to grayish black and becomes furrowed into flat-topped rough ridges separated by irregular V-shaped crevices (fig. 2).

Overwintering buds are large and heavily coated or saturated with a yellow, gummy, fragrant, amber-colored resin. The twigs are moderately stout, smooth, lustrous, and reddish brown. The leaves are 3 to 6 inches long, 2 to 4 inches wide, broadly egg-shaped, and gradually tapering to a sharp tip (fig. 3). The leaf edges have many small, rounded teeth. The upper leaf surface is a lustrous dark green while the lower surface is pale green, commonly having rusty-brown blotches.

The flower catkins mature in April and May before the leaves appear (fig. 4). The small (1/4 to 1/3 inch) seed-bearing capsules, occurring in catkin-shaped clusters, mature during May or June when the leaves are about two-thirds grown; seed dispersal follows immediately. The white, cottony mass containing the seed is dispersed for great distances by the wind. Abundant seed is produced every year, but it remains viable for only a few days.

In addition to reproduction from seed, balsam poplar also reproduces vegetatively from root suckers, stump sprouts, and cuttings. Root suckers appear prolifically after cutting or fire and are very important in reproducing an area to this type. If the moisture conditions are correct, the air-borne seed will make this tree a pioneer species on areas where it did not appear before, such as freshly exposed alluvium or upland burns. Stump sprouts usually break off at an early age and are believed to be ineffective for reproducing in large areas. The tree can be propagated easily from root or stem cuttings.

Balsam poplar is quite intolerant of shade, thus forming even-aged stands. It will grow in competition with other species only if it is dominant. It is a good self-pruner and commonly has expanses of clear bole of 30 to 50 feet.

Compared to many of its associates, balsam poplar has few enemies. Young, thin-barked trees are easily killed by fire while the older, thick-barked trees are quite fire resistant. The poplar and willow weevil (*Cryptorhynchus lapathi*), an introduced insect, is the most serious insect pest and causes considerable mortality in sapling and small pole stands. Local damage by the forest tent caterpillar (*Malacosoma disstria*) and the poplar borer (*Saperda calcarata*) usually is not serious. Common decays in balsam poplar are heart rot caused by *Fomes igniarius* and butt rot by *Armillaria mellea.* Mortality caused by the *Hypoxylon priunatum* canker, which may be quite serious in quaking aspen, is negligible in balsam poplar.

Common Names

Balsam poplar is the name commonly used, but others are balm-of-Gilead, balm, bam, tacamahac, poplar, black poplar, and Liard (Que.).

Related Commercial Species

Balsam poplar is similar to other species in the *Populus* genus and is usually included with the more commercially important aspen or cottonwood for reported inventory of wood and sawtimber. In forest inventories of some parts of the United States, it is included with mixed lowland hardwoods.

Supply

There are no recent estimates of the total stand of balsam poplar within its entire natural range in the United States. However, in the Lake States, where production is concentrated, Michigan, Minnesota, and Wisconsin had growing stock volumes of 232,200, 371,924, and 32,600 thousand cubic feet, respectively. Of this growing stock, the three respective Lake States had sawtimber volumes of 658,800, 530,860, and 80,600 thousand board feet.

Production

Balsam poplar is a very underutilized species. For the States for which production data are available,

Michigan, Minnesota, and Wisconsin, the annual cuts were 997, 865, and 85 thousand cubic feet. Of this annual cut volume, the annual sawtimber cut was 5,819, 1,510, and 179 thousand board feet for the three States. The annual cut of growing stock and of sawtimber is only approximately one-tenth of the collective net annual growth or annual desirable cut for the three States. Similar patterns of underuse for this species probably exist in other areas of the United States, but production data are not available because balsam poplar is included with aspen, cottonwood, or mixed lowland hardwoods.

Characteristics and Properties

The sapwood of balsam poplar is light colored, varying from creamy to almost white. There is no distinct boundary between sapwood and heartwood. The heartwood varies in color from light brown to dark greyish brown and occasionally has a reddish brown tinge. The growth rings in balsam poplar are distinct but are not sharply delineated. The wood is diffuse and porous with a uniform texture similar to aspen and cottonwood. It has a characteristic musky odor when green but lacks odor and taste when dry.

Balsam poplar wood is light in weight (23 to 29 lbs/ft^3 air dry), quite soft, and machines easily with tools. It is straight grained but comparatively weak in strength properties. The wood has low nail-holding capacity but has little tendency to split. It has good finish and paint-holding properties. The wood is low in decay resistance and not durable in exposed situations. Considerable care must be taken in seasoning lumber to overcome a tendency to warp and twist.

Principal Uses

Balsam poplar's light weight, color, finishing, and painting properties, plus its good veneer cutting and machining ability, lend its use to a wide variety of products. It has been used to make boxes, crates, baskets, excelsior, veneers, plywood, drawer bottoms, and core stock. However, aspen and cottonwood are preferred species for the above products and balsam poplar has not been used as widely or in as large quantities as these species. Furthermore, many of the above products such as boxes and crates, baskets, and excelsior have small present-day markets since they have been largely replaced by other materials.

The best future use of this species appears to be pulpwood. It can be used in the same pulping processes as the preferred aspen and cottonwood. As future pulpwood demand becomes greater, balsam poplar may be used more extensively to offset shortages.

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NOTE: This publication supersedes unnumbered publication *Balsam Poplar*, issued 1945.

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